**COMMONWEALTH OF VIRGINIA**
**Department of Environmental Quality**
**Blue Ridge Regional Office**

# STATEMENT OF LEGAL AND FACTUAL BASIS

MasterBrand Cabinets, Inc.
220 Mehler Lane Martinsville, VA (Henry County), Virginia
Permit No. BRRO-21432

Title V of the 1990 Clean Air Act Amendments required each state to develop a permit program to ensure that certain facilities have federal Air Pollution Operating Permits, called Title V Operating Permits. As required by 40 CFR Part 70 and 9 VAC 5 Chapter 80, MasterBrand Cabinets, Inc., has applied for a Title V Operating Permit for its Martinsville facility. The Department has reviewed the application and has prepared a draft Title V Operating Permit.

Permit Contact: _____ Date:
Margaret O. Wagner
(540) 562-6713

Air Permit Manager: _____ Date:
David J. Brown

Regional Director: _____ Date:
Robert J. Weld

## FACILITY INFORMATION

Permittee
MasterBrand Cabinets, Inc.
P.O. Box 420
Jasper, IN 45747

Facility
MasterBrand Cabinets, Inc.
220 Mehler Lane
Martinsville, VA 24112

County-Plant Identification Number: 51-089-00132

## SOURCE DESCRIPTION

NAICS Code: 33711- Wood Kitchen Cabinet and Countertop Manufacturing.

MasterBrand Cabinets Inc., manufactures wood kitchen and bath cabinets. The facility is a Title V major source of volatile organic compounds (VOCs) and a major source for combined HAPs. This source is located in a PSD area for all pollutants, and is a PSD synthetic minor source for pollutants. The facility is subject to MACT JJ for wood furniture manufacturing. No NSPS requirements are applicable to the facility. MasterBrand Cabinets currently has one New Source Review (NSR) permit last issued on March 21, 2011.

## COMPLIANCE STATUS

A full compliance evaluation of this facility, including a site visit, was conducted on July 20, 2010. In addition, all reports and other data required by permit conditions or regulations, which are submitted to DEQ, are evaluated for compliance. Based on these compliance evaluations, the facility has not been found to be in violation of any state or federal applicable requirements at this time.

## EMISSION UNIT AND CONTROL DEVICE IDENTIFICATION

The emissions units at this facility consist of the following:

| Emission Unit ID | Stack ID | Emission Unit Description | Size/Rated Capacity* | Pollution Control Device (PCD) Description | PCD ID | Pollutant Controlled |
|---|---|---|---|---|---|---|
| M-1 | BHS-1, BHS-2 | Machining Operations | 3000 cpd | Fabric Filters | BH1, BH2 | PM |
| SA-1 | BHS-3 | Sub-Assembly Operations | 3000 cpd | Fabric Filters | BH3 | PM |

| | | | | | | |
|---|---|---|---|---|---|---|
| F-1 | FS-1 through FS-23 | Finishing Operations | 3000 cpd | Dry Filters | F1- F23 | PM |
| F-1 | FS-24 (End grain equalizer) | Spray Booth for Finishing Operations | 3.6 gph | Dry Filters | F1-24 | PM |
| FA-1 | | Final Assembly Operations | 3000 cpd | | | |
| W-1 | | Warehouse Operations | 3000 cpd | | | |

Notes:
1. The size/rated capacity is provided for informational purposes only, and is not an applicable requirement.
2. Cpd = cabinets per day

**EMISSIONS INVENTORY**

A copy of the 2010 annual emission update is attached.

Emissions are summarized in the following tables.

2010 Actual Emissions

| | 2010 Criteria Pollutant Emission in Tons/Year | | | | |
|---|---|---|---|---|---|
| Emission Unit | VOC | CO | $SO_2$ | $PM_{10}$ | $NO_x$ |
| Facility Wide | 120.77 | 0.18 | 0.006 | 4.42 | 0.92 |

2010 Facility Hazardous Air Pollutant Emissions

| Pollutant | 2010 Hazardous Air Pollutant Emission in Tons/Yr |
|---|---|
| Chromium Compounds | 0.003 |
| Cobalt Compounds | 0.00014 |
| Glycol Ether | 0.336 |
| HAP Glycol Ether | 0.022 |
| POMTV-Polycyclic Organic Matter | 0.031 |
| Xylene Isomers | 1.28 |
| Formaldehyde | 0.088 |

| | |
|---|---|
| Methanol | 1.69 |
| Dibutyl Phthalate | 0.00003 |
| Naphthalene | 0.031 |
| Cumene | 0.0065 |
| Ethylbenzene | 0.309 |
| Ethylene Glycol | 0.0013 |
| Vinyl Acetate | 0.00017 |
| Methyl Isobutyl Ketone | 0.853 |
| Toluene | 5.89 |
| Phenol | 0.030 |
| Diethanolamine | 0.00076 |
| Plantwide Total | 10.57 |

**EMISSION UNIT APPLICABLE REQUIREMENTS – Manufacturing Equipment (Section III)**

**Limitations**

Manufacturing equipment at the MasterBrand Cabinet facility includes machining operations, assembly operations and spray booths for the finishing operations, for which construction and operation was authorized in the NSR Permit dated November 2, 2004, which was superseded by a NSR permit dated February 18, 2005 which has been superseded by the NSR permit dated March 21, 2011.

Raw material wood is cut and drilled to specification prior to assembly in the machining operation. There are 10 to 20 pieces of cutting/drilling (various saws and drills) equipment that are controlled by baghouses. Machining operations generate particulate.

Sub assembly operations are where the cabinet parts are sanded and some of the smaller parts of the cabinets are put together using glue or nails. Cabinet pieces are assembled by hand. The only equipment in this area are sanders, nail guns and glue guns. Sanding equipment is controlled by a baghouse. The glue is a HAP free wood glue. The emissions from sub assembly are particulate matter.

The finishing area is where the pre-assembled cabinet parts are coated with various toners, stains, sealers and topcoats. The finishing area has 24 spray booths with the most recent booth addition (#24) reviewed for permitting in the March 21, 2011 permit. The facility also has 13 electric powered ovens for curing and preheating. The spray booths include typical spray coating operations. Each spray booth is equipped

with a fan to pull air from the spray booth to a roof vent. PM emissions from coating operations are controlled by filters on each spray booth exhaust. Volatile organic compounds (VOCs), hazardous air pollutants (HAPS), PM and PM10 are all created in the finishing area.

The limitations are carried forward from the March 21, 2011 NSR permit into the Title V permit:

1. Condition III. A.1. - Filters will control PM emissions from the spray booths.

2. Condition III.A.2. - Three baghouses are used to control PM emissions from machining operations.

3. Condition III.A.3 and 4. - There is a grain loading efficiency for the baghouses and minimum efficiency requirements for filters in the spray booths.

4. Condition III.A.5. - Fugitive dust emission controls are included for the manufacturing operation

5. Condition III.A.7. - There is a throughput limit for VOCs from the facility.

6. Condition III.A.8., 9., 10., 11., and 12. - The allowable emission rates and opacity rates are limited.

7. Condition III.A.13. - Maintenance and operation procedures are specified

**Monitoring / Recordkeeping**

The monitoring and recordkeeping requirements are carried forward from the March 21, 2011 NSR permit into the Title V permit:

1. Condition III. B.1. - Monitoring devices (differential pressure) are required for each baghouse and each is required to be checked daily to ensure proper working condition.

2. Condition III. B. 2. - Weekly observations are required for visible emissions from the baghouses.

3. Condition III. B. 3. - Daily observations are required for visible emissions from the spray booths.

4. Condition III. C.- The permit includes requirements for maintaining records to include the following: monthly and annual hours of operation of the facility and individual units; monthly and annual throughput of VOCs; hourly emissions of VOCs as a monthly average; monthly and annual consumption of each VOC containing material used; monthly and annual estimates of PM and PM10 emissions (facility wide); monthly and annual estimates of VOCs (facility wide); monthly average hourly VOC emissions; monthly and annual estimate of PM emitted from baghouses; monthly and annual estimate of PM emitted from spray booths; differential pressure readings for each baghouse; differential pressure readings in each baghouse capture duct system; spray booth weekly dry filter inspections; MSDSs or other vendor information showing VOC and HAP content of materials used; in addition, the facility is required to maintain records for all stack tests, visible emission evaluations and performance evaluations, as well as maintenance and training records

and records to demonstrate compliance with 40 CFR Part 63, Subpart JJ.

The gr/scf limit for PM for the baghouses included in the permit are taken from the March 21, 2011 NSR permit. The limit is based on a grain loading value obtained as a manufacture's guarantee and represents BACT. The facility has been required to stack test one of the three baghouses (one served as a representative unit for the three in place as they are all the same size and type). Baghouse # 2 was tested on February 5, 2008, using methods 1 through 4 and 17. Results of the stack test included an average concentration of 0.0003 gr/dscf and an average mass rate of 0.11 lb/hr. To provide an ongoing indication of baghouse performance, the permit requires that the baghouses each be equipped with a device to continuously measure pressure drop and requires the permittee to conduct daily observations of the pressure gauges and weekly visible emissions observations for the presence of visible emissions sufficient to identify corrective measures, if needed and to demonstrate compliance with proper operation and maintenance of the baghouses. With respect to this control equipment, the permittee is also required to develop a maintenance schedule, to have available written operating procedures, to train operators in proper operation and to maintain an inventory of needed spare parts to maintain the equipment in proper working order.

The lb/hr limit for PM for spray booth No. 24 is taken from the March 21, 2011 NSR permit and represents BACT. The limit is based on a use of a filter in the booth with a minimum control efficiency of 85% for PM. The permittee has a manufacturer's guarantee of filter efficiency above 90% and maintains records onsite of periodic testing conducted on paint collector arrestance. The most recent tests were conducted on March 30 and 31, 2010 and April 1, 2010. Test results indicated an arrestance of 97.54%, 99.54% and 99.78%, respectively. Filters in the booths are changed every shift for which records are maintained onsite.

To provide an ongoing indication of the facility's spray booth filter performance, the permit requires that the permittee conduct daily visible emission observations for the presence of visible emissions sufficient to identify corrective measures, if needed and to demonstrate compliance with proper operation and maintenance of the spray booths. With respect to this control equipment, the permittee is also required to develop a maintenance schedule, to have available written operating procedures, to train operators in proper operation and to maintain an inventory of needed spare parts to maintain the equipment in proper working order.

The permit contains plantwide emission limits for PM and PM10. These limits were established in accordance with agency practice of establishing emission limits for any criteria pollutant expected to be emitted at a level greater than 0.5 tpy; primarily used for emission inventory purposes.

The permit includes a plant wide VOC emission limit of 248.4 tons. Previously the permittee had assumed that 100% of the VOCs used at the plant were emitted. However, the facility requested a waste credit reduction to demonstrate compliance with the plant wide VOC limit, while using a mass balance approach to calculate VOC emissions and EPA Method 24 monthly for each shipment of waste to obtain a waste credit that would be subtracted from the VOC total. The facility can choose to maintain a mass balance that includes all waste material generated onsite in the calculation (method used previously) and demonstrate compliance with the plant wide VOC limit of 248.4 tons, or the facility can maintain detailed records and test the VOCs in the waste monthly. Language in the March 21, 2011 permit was revised to

include this alternate method for demonstrating compliance with the plant wide VOC limit. The options presented above are sufficient monitoring to meet periodic monitoring requirements and ensure compliance with the limits included in this permit.

Considering the margin of compliance, the maintenance, training, and monitoring outlined in this section in conjunction with the recordkeeping are considered sufficient monitoring and recordkeeping to ensure compliance with the limits included in this permit.

**Compliance Assurance Monitoring (CAM)**

CAM applies to an emissions unit if that unit (1) has the potential to emit (in the absence of add-on controls) a regulated pollutant in an amount that exceeds its major source threshold, (2) is subject to an emission limitation for that pollutant, and (3) uses a control device to achieve compliance with the emission limitation.

The uncontrolled emission rate for PM (i.e. the only pollutant for which add-on control is required) from the machining and sub-assembly operations (Ref. BHS-1, BHS-2, and BHS-3) are less than the major source threshold of 100 tons/year.

There are no CAM affected units at this facility.

**Testing**

Testing / monitoring ports are required upon request. The facility is required to conduct a stack test, on at least one baghouse, for PM and PM10 to demonstrate compliance with the emission limits and control efficiency requirements listed in the permit, once during the term of the permit.
The facility conducted the last stack test on the baghouse #2 exhaust duct on February 5, 2008. The reported results for that stack test were:

Average concentration (gr/dscf): 0.0003
Average Mass Rate (lb/hr): 0.11

**Reporting**

The Recordkeeping and Reporting requirements of the Title V General Conditions apply to the manufacturing facility.

**Streamlined Requirements**

The requirement that addressed VOC emissions from spray booths and required that they be minimized by proper spraying techniques or the use of HVLP and/or assisted airless spray equipment as listed in Condition 4 of the March 21, 2011 NSR permit was streamlined from the permit. 40 CFR Part 63, Subpart JJ has requirements for work practice standards and this condition was duplicative of the MACT requirements.

The requirement that addressed the use of ultra violet cured coatings, low VOC coatings or waterborne coatings as listed in Condition 5 of the March 21, 2011 NSR permit was streamlined from the permit. 40 CFR Part 63, Subpart JJ has requirements for work practice standards and this condition was duplicative of the MACT requirements.

The requirement that VOC emissions from cleaning and purging shall be minimized as required by Condition 6 of the March 21, 2011 NSR permit was streamlined from the permit. 40 CFR Part 63, Subpart JJ has requirements for cleaning and purging operations and this condition was duplicative of the MACT requirements.

The requirement for control equipment determinations as required by condition 7 of the March 21, 2011 NSR permit was streamlined from the permit. The condition is in the NSR permit for informational purposes only and was omitted from the Title V permit as it is not an applicable requirement.

**EMISSION UNIT APPLICABLE REQUIREMENTS – Wood Furniture MACT Requirements (Section IV)**

**Limitations**

The finishing area is subject to the requirements of 40 CFR Part 63, Subpart JJ – National Emission Standards for Wood Furniture Manufacturing Operations. The permit includes all requirements of Subpart JJ. Subpart JJ was revised on November 21, 2011. Revisions for wood furniture manufacturing operations include a 1 percent formaldehyde coating and contact adhesive limit and an alternative 400 pound per 12-month formaldehyde use limit as well as a prohibition on the use of conventional spray guns. The effective date for these requirements is 3 years from the effective date of the standards or November 21, 2014.

Limitations of the MACT have been outlined in the permit and include:

1. VHAP weighted average limits for finishing operations or compliant finishing material limitations, or a combination of averaging and compliant coatings.
2. Strippable paint booth coatings VOC limits.
3. Compliant contact adhesive VHAP limits.
4. Work Practice Implementation Plan requirements.
5. Operator Training requirements.
6. Inspection and Maintenance Plan requirements.
7. Cleaning and Washoff Solvent accounting system requirements.
8. Spray booth cleaning requirements.
9. Storage requirements for materials used.
10. Application equipment requirements.
11. Line cleaning requirements.
12. Gun cleaning Requirements.
13. Washoff operations requirements.
14. Formulation Assessment Plan for finishing operation requirements.
15. Operation and maintenance requirements.

**Monitoring / Recordkeeping**

The monitoring requirements of Subpart JJ have been outlined in the permit and include the following:

1. Condition IV.B.1. - Averaging calculation for finishing operations using averaging.

2. Condition IV.B.2. - Compliance certification requirements for finishing operations using compliant coatings.

3. Conditions IV.B.3. - Compliance certification requirements for contact adhesive operations using compliant adhesives.

4. Conditions IV.B.4. - Compliance certification requirements for strippable spray booth coatings using compliant strippable spray booth coatings.

5. Condition IV.B.5. - Compliance certification requirements for work practice standards.

6. Condition IV.C.1. - Certified product data sheets for materials used at the facility.

7. Condition IV.C.2. - If the averaging method is used, copies of averaging calculations, including documentation to support the calculations.

8. Condition IV.C.3. - Records to demonstrate compliance with the work practice implementation plan.

9. Condition IV.C.4. and 5. - Compliance certification records required by the MACT, including all other information submitted with the compliance status or semiannual reports.

10. Condition IV.C.6. - Records to demonstrate compliance with the MACT must be maintained for a period of 5 years.

The monitoring described above is at least as stringent as Compliance Assurance Monitoring (CAM). 40 CFR Part 63, Subpart JJ was promulgated on December 7, 1995. MACTs promulgated after 1990 are considered to have monitoring sufficient for CAM, and CAM is considered sufficient for periodic monitoring.

**Testing**

No specific testing is required with this MACT.

**Reporting**

The following reporting requirements for MACT affected equipment are included in the Title V permit:

1. Semi-annual reports to meet the requirements of Subpart JJ
2. Written notification if the facility exceeds the baseline level of material usage as outlined in Subpart JJ.

In addition, the Recordkeeping and Reporting requirements of the Title V General Conditions apply to the manufacturing facility.

**Streamlined Requirements**

The reporting requirement pertaining to notification of compliance as required by Condition 23 of the March 21, 2011 NSR permit was streamlined from the permit. 40 CFR Part 63, Subpart JJ has requirements for an initial notification of compliance that must be submitted no later than 60 days after the compliance date of the MACT. MasterBrand submitted the initial Notification of Compliance on July 28, 2005. This reporting requirement is no longer needed as the intent of the requirement has been met.

**GENERAL CONDITIONS**

The permit contains general conditions required by 40 CFR Part 70 and 9 VAC 5-80-110 that apply to all Federal-operating permitted sources. These include requirements for submitting semi-annual monitoring reports and an annual compliance certification report. The permit also requires notification of deviations from permit requirements or any excess emissions.

**Comments on General Conditions**

**B. Permit Expiration**

This condition refers to the Board taking action on a permit application. The Board is the State Air Pollution Control Board. The authority to take action on permit application(s) has been delegated to the Regions as allowed by §2.2-604 and §10.1-1185 of the *Code of Virginia*, and the "Department of Environmental Quality Agency Policy Statement No. 2-09".

**F. Failure/Malfunction Reporting**

Section 9 VAC 5-20-180 requires malfunction and excess emission reporting within four hours of discovery. Section 9 VAC 5-80-250 of the Title V regulations also requires malfunction reporting; however, reporting is required within two days. Section 9 VAC 5-20-180 is from the general regulations. All affected facilities are subject to section 9 VAC 5-20-180 including Title V facilities. Section 9 VAC 5-80-250 is from the Title V regulations. Title V facilities are subject to both sections. A facility may make a single report that meets the requirements of 9 VAC 5-20-180 and 9 VAC 5-80-250. The report must be made within four daytime business hours of discovery of the malfunction.

**J. Permit Modification**

This general condition cites the sections that follow:
9 VAC 5-80-50. Applicability, Federal Operating Permit For Stationary Sources

9 VAC 5-80-190. Changes to Permits.
9 VAC 5-80-260. Enforcement.
9 VAC 5-80-1100. Applicability, Permits For New and Modified Stationary Sources
9 VAC 5-80-1605. Applicability, Permits For Major Stationary Sources and Modifications Located in Prevention of Significant Deterioration Areas
9 VAC 5-80-2000. Applicability, Permits for Major Stationary Sources and Major Modifications Locating in Nonattainment Areas

**U. Malfunction as an Affirmative Defense**

The regulations contain two reporting requirements for malfunctions that coincide. The reporting requirements are listed in sections 9 VAC 5-80-250 and 9 VAC 5-20-180. The malfunction requirements are listed in General Condition U and General Condition F. For further explanation see the comments on general condition F.

**Y. Asbestos Requirements**

The Virginia Department of Labor and Industry under Section 40.1-51.20 of the Code of Virginia also holds authority to enforce 40 CFR 61 Subpart M, National Emission Standards for Asbestos.

**STATE ONLY APPLICABLE REQUIREMENTS**

There are no state only requirements contained in the underlying minor NSR permit.

**FUTURE APPLICABLE REQUIREMENTS**

Future applicable requirements are outlined in the Emission Unit Applicable – Wood Furniture MACT requirements – Limitations section above. Future applicable requirements are revisions to the Wood Furniture MACT that become effective on November 21, 2014.

**INAPPLICABLE REQUIREMENTS**

40 CFR Part 63, Subpart RRRR – National Emission Standards for Hazardous Air Pollutants: Surface Coating of Metal Furniture is not applicable to the MasterBrand Cabinets facility. This MACT is applicable to facilities that apply surface coatings to metal furniture by means of spray gun or dip tank. MasterBrand Cabinets does not do any surface coating of metal furniture.

40 CFR Part 63, Subpart HHHHHH – National Emission Standards for Hazardous Air Pollutants: Paint Stripping and Miscellaneous Surface Coating Operations at Area Sources is not applicable to the MasterBrand Cabinets facility because MasterBrand is a major source and this MACT is applicable to area sources.

40 CFR Part 63, Subpart XXXXXX – National Emission Standards for Hazardous Air Pollutants: Area Source Standards for Nine Metal Fabrication and Finishing Source Categories is not applicable to the MasterBrand Cabinets facility because MasterBrand is a major source and this MACT is applicable to area

sources.

(GHG)Emissions: There are no applicable GHG permitting requirements.

**INSIGNIFICANT EMISSION UNITS**

The insignificant emission units are presumed to be in compliance with all requirements of the Clean Air Act as may apply. Based on this presumption, no monitoring, recordkeeping or reporting shall be required for these emission units in accordance with 9 VAC 5-80-110.

Insignificant emission units include the following:

| Emission Unit No. | Emission Unit Description | Citation[1] | Pollutant Emitted (5-80-720 B.) | Rated Capacity ( 5-80-720 C.) |
|---|---|---|---|---|
| WH | Water heater, n.g | 9 VAC 5-80-720 C | | <7.6 MMBtu/hr |
| MAH-1 | Make-up air heater, n.g. | 9 VAC 5-80-720 C | | <7.6 MMBtu/hr |
| MAH-2 | Make-up air heater, n.g. | 9 VAC 5-80-720 C | | <7.6 MMBtu/hr |
| MAH-3 | Make-up air heater, n.g. | 9 VAC 5-80-720 C | | <7.6 MMBtu/hr |
| MAH-4 | Make-up air heater, n.g. | 9 VAC 5-80-720 C | | <7.6 MMBtu/hr |
| MAH-5 | Make-up air heater, n.g. | 9 VAC 5-80-720 C | | <7.6 MMBtu/hr |

[1]The citation criteria for insignificant activities are as follows:
9 VAC 5-80-720 A - Listed Insignificant Activity, Not Included in Permit Application
9 VAC 5-80-720 B - Insignificant due to emission levels
9 VAC 5-80-720 C - Insignificant due to size or production rate

**CONFIDENTIAL INFORMATION**

The permittee did not submit a request for confidentiality. All portions of the Title V application are suitable for public review.

**PUBLIC PARTICIPATION**

The draft permit will be placed on public notice in the Martinsville Bulletin from 3/11/2012 to 4/10/2012.